Chapter 2
Resource Description and Evaluation

Agriculture

Resource Description

Soils. The Fish Creek study area contains approximately 16,000 acres of Class II and III soils according to a soils inventory in 1973 by the Soil Conservation Service. Class II and III soils are soils with high capability for agriculture. Soil depth in the area reaches 30 inches. The study area also contains a limited amount of Class IV soils which can be used for agriculture with proper management. The primary limitation of the Class IV soils in the study area is steepness. A generalized soils map is on page 11. For a more specific map, see the U.S. Department of Agriculture's 1973 publication: Soils Survey, Susitna Valley, Alaska.

Climate. The climate of Fish Creek is similar to other areas in the Matanuska and Susitna Valleys. The average number of frost free days at Wasilla, the closest weather station, is 111 days. In 1982 there were an average of 2143 growing degree days (base 40°F) at Wasilla. The average temperature in July is 59; in September it is 49. In Skwentna, on the other side of the Fish Creek Unit, the average July temperature is 58 and the average September temperature is 46. Average annual precipitation at Wasilla is 14.17 inches (8.84 inches between April and September) and at Skwentna, it is 27.89 inches (14.95 inches between April and September). While weather at these stations will not be exactly the same as in the Fish Creek area, this information gives an indication of what can be expected. Microclimates often affect production within relatively small geographical areas. Direction of slope (i.e., exposure) and direction, duration, and velocity of prevailing winds influence the growing season.

Water. Precise data on quality and availability of ground water and the quality of surface water does not currently exist. Visual observation shows much surface water in the many lakes and swamps throughout the area, but these are not likely to be practical sources of water for agricultural development. According to Larry Dearborn and William Long of Division of Geological and Geophysical Surveys: "The availability of ground water through drilled wells in the Fish Creek tract could be severely limited by subsurface conditions that may occur here. The presence of either permafrost at depth or the Bootlegger Formation, a commonly thick sequence of silt and clay, could preempt the occurrence of aquifers at relatively shallow depth. In addition, it appears possible that deeper aquifers, if present, may contain brackish water. Test drilling will be needed to demonstrate what subsurface conditions are actually like in this area." (from Alaska's Agriculture and Forestry, Chapter 7 "Water Resources", page 57).

Resource Evaluation

The Fish Creek unit contains the last large block of undeveloped agricultural (Class II and III) soils east of the Susitna River. Generally, the climate is suitable for farming. The availability and suitability of ground water is not known. The streams and wetlands form an extensive and complex surface drainage system. Mature upland mixed forest stands of spruce, birch, and poplar indicate the presence of well drained soils on upland sites.

The initial cost of farm operation requires a reasonably quick rate of return and therefore forces the developer to utilize only those soils with the greatest potential for production of agricultural crops. For this reason, emphasis is placed on bringing only Class II and III soils into production. Farmers may choose to plant Class IV soils in permanent crops (hay, pasture), which may contribute positively to the economics of their operation.

The general landscape of the Fish Creek project area is complex due to the nature of the drainage patterns and the random location of muskegs and poorly drained soils. As a result the parcel boundaries meander. This affects the organization of the farm units and adds to the cost of the surveying the tracts as well as to the cost of road construction.

The location of the Fish Creek unit, three miles northwest of the Point MacKenzie agricultural project, increases its attractiveness. However, Fish Creek is currently inaccessible by road. The benefits of developing the area for agriculture and public use need to be weighed against the costs of road development.

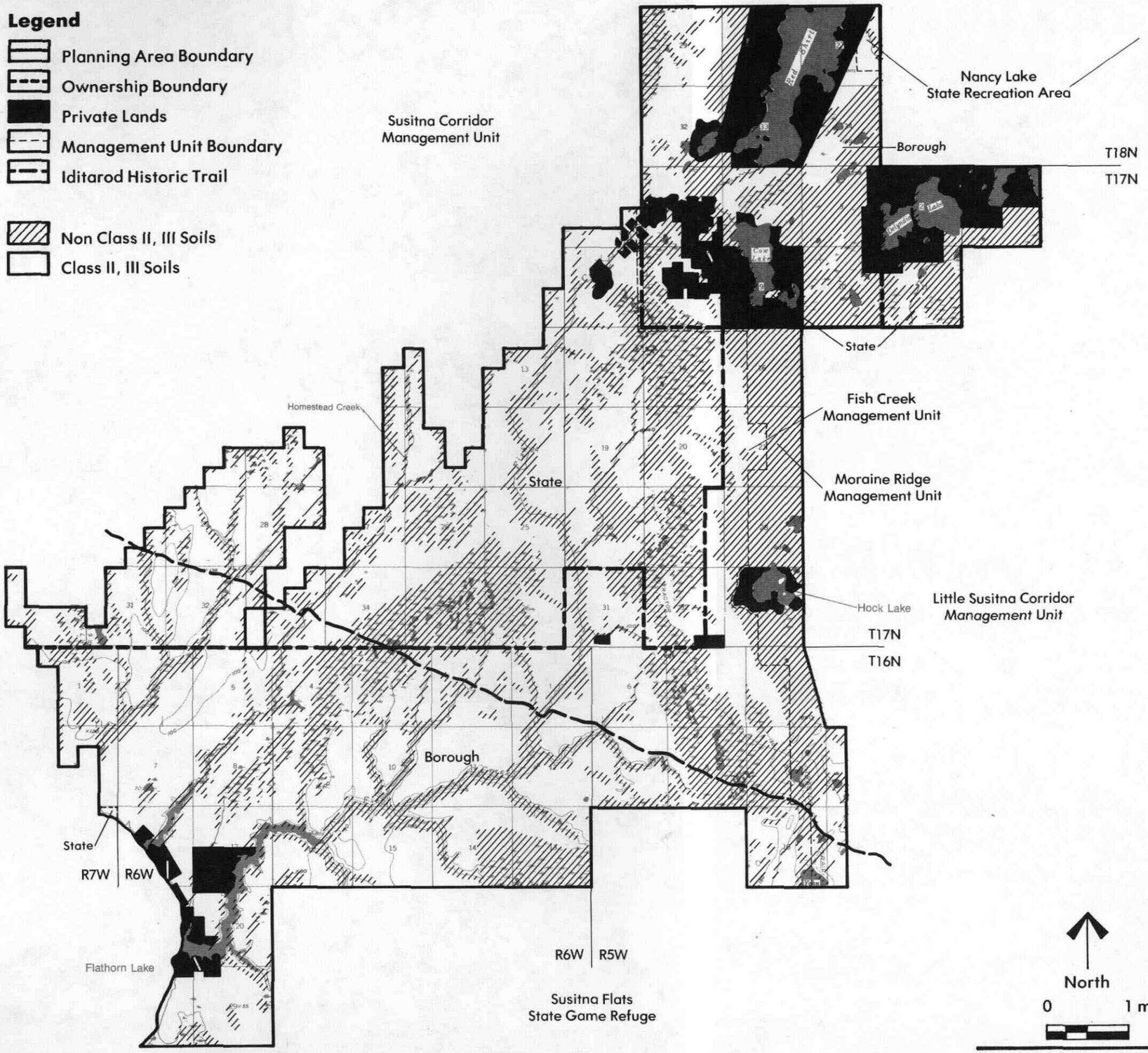
Financial and Economic Analysis. The Division of Agriculture has analyzed the economic potential of an agricultural project at Fish Creek in a draft report entitled Fish Creek Agricultural Area Financial and Economic Analysis. This report is available from the Division of Agriculture (Box 949, Palmer, Alaska 99645-0949) and is summarized in the appendix of this plan.

The report makes a number of assumptions about what could happen:

1. Farms at Fish Creek will grow a mixture of crops (potatoes, vegetables, barley, and hay) and will be between 80 and 600 acres in size;

2. The cost of agricultural rights will be $100 an acre;

3. 1000 acres of potatoes will be grown at Fish Creek which by the year 2000 may be one-half of the acreage needed to meet in-state demand for potatoes;



FISH CREEK
Management Plan

General Soil Classification

4. Vegetables will be produced on 150 acres;

5. Remaining agricultural soils will be planted in hay, grain or pasture;

6. Everyone who purchases a parcel will be a serious farmer interested in getting his tract into production as quickly as possible;

7. Sixty percent of road construction and maintenance costs will be allocated to agriculture (this is an arbitrary figure that assumes that other benefits will be derived from road construction - primarily recreational);

8. Road costs were estimated at approximately $19.2 million spread over two phases and road maintenance at $8000 per mile per year; phase 1 roads were assumed to be built before the sale of agricultural tracts and phase 2 roads in the fifth year of development.

9. One-third of the farmers will elect to harvest their timber and take advantage of their option to delay their development schedules three years, resulting in harvest of one-third of the timber on the tracts.

Based on the above assumptions, benefits and costs were calculated for a 47 year period and the net benefits (benefits minus costs) were calculated for each year. The overall average annual rate of return for the 47 year period is 9.4 percent. (This assumes that all project investment and operating costs have been recovered and that the project could in addition pay 9.4 percent annual interest for the use of the capital.)

If 100% of the road construction and maintenance costs were allocated to agriculture, the overall average annual rate of return would be 7.31 percent. If there were no delay for timber harvest and all purchasers put their farms into production very rapidly, the average rate of return would be 11.70 percent if 60 percent of road costs were allocated to agriculture. This decreases to 8.9 percent with 100 percent of road costs allocated to agriculture. (The cost of providing power to the farms is not included. The Matanuska Electric Association estimates this cost as $6.27 million including 15 miles of transmission lines, 55 miles of three phase distribution lines, and a substation.)

Because a change in assumptions could significantly alter the conclusions, it is important to do a sensitivity analysis that varies the assumptions on rate of development, amount of acreage in potatoes and vegetables, proportion of road costs charged to agriculture, and prices of farm products. Such a sensitivity analysis would show what happens to the overall average rate of return under different assumptions such as a slower rate of development or fewer acres in potatoes.